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SPECIFICATIONS OF SOVIET CYLINDRICAL AND  
 PROFILE GRINDING MACHINES

A description of cylindrical grinding machines Models 3151, 3152, 3160, 3162, 3164A, universal cylindrical grinding machine Model 3130, and profile-grinding machines Models 3433 and 3430, all manufactured by the Khar'kov Machine-Tool Building Plant imeni Molotov, is given below.

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The cylindrical grinding machines are designed for external grinding of cylindrical and tapered surfaces. Grinding of tapered surfaces is accomplished by swiveling the upper table. All the machine tools are operated hydraulically. A two-speed table traverse handwheel is provided. The machine tools are equipped with steady rests and truing devices for diamond truing of grinding wheels, or with a hard-alloy disk for diamondless truing. Each machine is driven by four electric motors with centralized push-button control.

The work is mounted between fixed centers, and is rotated by means of a dog secured in a faceplate in the headstock.

Model 3151. Longitudinal table travel, rapid advance and withdrawal of the grinding wheel, and intermittent cross feed of the grinding-wheel head during table reversal (for each single or double table stroke) are accomplished hydraulically. When grinding with intermittent feed, the machine is provided with automatic feed disengagement. Grinding can take place up to the stop with compensation for wheel wear.

Model 3152. Longitudinal table travel, rapid advance and withdrawal of the grinding-wheel head, and the infeed of the grinding wheel are accomplished hydraulically.

During infeed grinding, the machine can be set for a semiautomatic work cycle, with the withdrawal of the grinding wheel when the work being ground attains the specified size (within the third-class accuracy range). Under these conditions, the following operations are performed automatically in successive order: advance

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of grinding wheel with simultaneous starting of work rotation, infeed grinding, withdrawal of grinding wheel, and stopping of work rotation. Grinding can take place up to the stop with compensation for wheel wear. An oscillating movement is transmitted to the grinding-wheel spindle.

These machine tools are driven by four electric motors:

	<u>Power of Motor (kw)</u>
For grinding-wheel head	7
For headstock	0.55
For hydraulic pump	2.2
For coolant pump	0.125

Specifications

	<u>Model 3151</u>	<u>Model 3152</u>
Maximum distance between centers (mm)	750	500
Maximum grinding diameter (mm)	150	150
Swing over table (mm)	125	125
Maximum angle of upper-table swivel (degrees)	± 5	± 6
Diameter of grinding wheel (mm)	450-600	480-600
Maximum width of grinding wheel (mm)		
With 600-mm diameter	63	63
With 500-mm diameter	100	100
Dimensions of machine (mm)		
Length	2,260	2,000
Width	1,590	1,880
Height	1,770	1,770
Weight of machine (kg)	3,900	3,500
Speeds of work rotation (rpm)	75, 150, 300	75, 150, 300

Model 3160. Longitudinal table travel, rapid advance and withdrawal of the grinding-wheel head, and intermittent grinding-wheel feed during table reversal are accomplished hydraulically. During grinding with intermittent feed, automatic feed disengagement is provided. Grinding can take place up to a rigid stop with compensation for wheel wear. The work is rotated by a dc electric motor with power of 0.25/0.5 kilowatt. The power of the electric motor for the grinding-wheel head is 10 kilowatts. The other electric drives are the same as in Models 3151 and 3152.

Specifications

Maximum distance between centers (mm)	1,000
Grinding diameters (mm)	10-250
Swing over table (mm)	160

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Maximum angle of table swivel (degrees)	±7
Diameter of grinding wheel (mm)	500-750
Width of grinding wheel (mm)	75
Dimensions of machine (mm)	
Length	3,320
Width	2,225
Height	1,500
Weight of machine (kg)	6,000
Speed of work rotation (rpm)	60-300

Model 3162. This machine tool is manufactured on the basis of Model 3160. It is equipped with a hydraulic mechanism for infeed, and, like Model 3152, can be set for a semiautomatic work cycle. Longitudinal grinding can be performed on this machine as well as infeed grinding.

The specifications of Model 3162 are the same, with the exception of its width, which is 2,300 millimeters, and the speed of work rotation (75, 150, and 300 rpm). In addition, Model 3162 has a more powerful electric motor for driving the grinding-wheel head (14 kilowatts instead of 10 as in Model 3160) and the headstock (one kilowatt instead of 0.5).

Model 3160 can also be produced with an ac electric motor for driving the work, like Model 3162.

Model 3164A. This machine is a modification of Model 3164 [see FDD Translation No 301, p 1437, and is designed for grinding heavy shafts up to 3,000 millimeters long. It differs from the Model 3164 by the distance between centers (3,000 millimeters instead of 2,000), total length (8,000 millimeters instead of 6,300), and weight (14,500 kilograms instead of 12,500). The maximum angle of upper-table swivel in this machine is somewhat less (±3 degrees instead of ±3.5 degrees).

Model 3130. This machine tool is designed for external and internal grinding of cylindrical and tapered surfaces. Grinding of tapered surfaces is accomplished by swiveling the upper table or headstock, as well as by swiveling the grinding-wheel head. The machine is hydraulically operated. Table reciprocation and automatic intermittent feed of the grinding wheel are accomplished hydraulically. The table and grinding-wheel head can also be moved by hand. Grinding can take place up to a stop with compensation for wheel wear. Internal grinding and face grinding are performed by means of a special, hinged grinding attachment secured to the body of the grinding-wheel head. The design of the headstock provides for grinding parts between fixed centers, with a movable headstock center, or in a chuck.

The work is rotated by a dc electric motor with smooth speed adjustment within the range of 75-300 rpm. In addition, the machine is equipped with four individual electric motors with centralized push-button control.

Specifications

Swing over table (mm)	165
Distance between centers (mm)	750

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## Dimensions of work being machined (mm)

## For external grinding

Maximum work diameter	300
Maximum grinding diameter	250
Maximum grinding length	750

## For internal grinding

Maximum diameter of hole that can be ground	100
Minimum diameter of hole that can be ground	27
Maximum length of hole that can be ground	100

## Dimensions of grinding wheels (mm)

For external grinding	350 x 32 x 127
For internal grinding	25 x 13 x 6

## Dimensions of machine (mm)

Length	2,260
Width	1,590
Height	1,850

## Weight of machine (kg)

3,900

Maximum angle of upper-table swivel (to one side) (degrees)	10
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Maximum angle of headstock swivel (degrees)	90
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Maximum angle of grinding-wheel-head swivel (degrees)	±90
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Model 3433. This machine tool is designed for grinding cam profiles for automobile and tractor camshafts in individual and small-series production, or, chiefly, for regrounding cams at automobile repair plants and machine-tractor workshops. In conformance with the purpose of this machine, it is built with hand controls, without hydraulic mechanisms.

Specification

Swing over rocking bar (mm)	95
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## Maximum size of shafts that can be machined (mm)

Length	1,260
Radius of rotation	90
Lift of cam	30

## Maximum weight of shaft (kg)

30

## Dimensions of grinding wheel (mm)

Diameter	500-600
Width	40-25

## Speeds of work rotation (rpm)

16 and 32

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## Dimensions of machine (mm)

Length	2,800
Width	1,700
Height	1,500

## Weight of machine (kg)

4,200

## Electric drive (kw)

Power of motor for grinding-wheel head with speed of 1,500 rpm	4.5
Power of motor for headstock with speed of 1,000 rpm	0.55
Power of motor for coolant pump with speed of 2,800 rpm	0.125

Model 3430. This hydraulic semiautomatic is designed for rough and finish grinding of cam profiles for automobile and tractor camshafts in mass production. The machine as delivered is set for grinding cams for any one camshaft. It can operate on a semiautomatic work cycle or by manual control. The number of formers on the headstock spindle corresponds to the number of cams to be ground.

When set for a semiautomatic cycle, grinding of cams to size, shifting from one cam to the next, and truing the grinding wheel are all performed automatically. An oscillating movement is transmitted to the grinding spindle.

Specifications

Swing over rocking bar (mm)	75
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## Maximum size of shafts that can be machined (mm)

Length	900
Radius of rotation	60
Lift of cam	15

## Maximum weight of shaft (kg)

30

## Dimensions of machine (mm)

Length	2,880
Width	1,920
Height	5,500

## Weight of machine (kg)

5,500

## Speed of work rotation (rpm)

30-60

## Electric drive (kw)

Power of motor for grinding-wheel head with speed of 1,500 rpm	7
Power of motor for headstock With speed of 3,000 rpm	1.7
With speed of 1,500 rpm	1.4
Power of motor for coolant pump with speed of 2,800 rpm	0.125

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